

EXTENDED REPORT

Indications for total hip replacement: comparison of assessments of orthopaedic surgeons and referring physicians

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Objectives: To analyse differences of opinions on indications for primary total hip replacements (THR) within and between groups of orthopaedic surgeons and the physicians who refer patients to them.

Methods: 22 orthopaedic centres in 12 European countries took part, resulting in a postal survey of 304 orthopaedic surgeons and 314 referring physicians. Each participant was asked to state what importance different domains (pain, functional impairment, physical examination and radiographs) have on their decision to recommend THR and to select the most appropriate level of severity of each symptom or sign for recommending THR. In addition, the participants were asked to prioritise other personal or environmental factors that affect their decision to undertake a THR.

Results: Rest pain, pain with activity and functional limitations were the most important criteria for THR, although range of motion and radiographic changes were of least importance. Both similarities and differences were observed within and between groups of surgeons and referring physicians in the overall approach to indications and the most appropriate level of severity of disease for recommending THR. Most surgeons agreed on severity levels in only 4 of 11 items and most referring physicians in only one. Between the groups, major differences occurred with regard to the importance of activities of daily living and the appropriate level of symptoms for THR. In general, compared with surgeons, referring physicians reported that the disease needed to be more advanced to warrant surgery.

Conclusion: Currently, no consensus exists on objective indication criteria for THR. The observed differences between the gatekeepers (referring physicians) and surgeons can lead to variations and perhaps inequities in the provision of care.

Total hip replacement (THR) relieves the pain and functional disability experienced by patients with moderate to severe arthritis of the hip, improving their quality of life.¹ It is a highly cost-effective procedure.² Large numbers of THRs are undertaken (eg, about 170 000/year in Germany and 40 000/year in England) mainly because of the high prevalence of symptomatic hip osteoarthritis in the Western world (about 10% of people ≥ 60 years). Although there has been a large amount of research on the outcomes of the procedure, particularly on prosthesis survival, relatively little empirical work has been undertaken on the most appropriate indication for the procedure.

Wide variations in the provision of THR have been reported both within^{3–6} and between the Organisation for Economic Co-operation and Development countries, with rates varying from 50 to 130 procedures per 100 000 inhabitants per year in the 1990s.⁷ Many possible reasons for these variations include differences in disease prevalence or severity, different population demographics, differences in the expectations of patients and surgeons and preferences for treatment, as well as restricted access to the procedure. Concerns have also been raised on possible under-utilisation in some areas and overuse in others,⁸ on the suggestion that doctors may use varying indications for THR and on “the very disturbing implication that this arbitrariness represents, for at least some patients, suboptimal or even harmful care”.⁹

Generally acknowledged indications for primary THR include joint pain, functional limitation and some radiographic evidence of joint damage.¹⁰ Many other factors can influence the decision to perform a THR in a patient with

osteoarthritis and there is a lack of consensus on the indicators and thresholds for these procedures.^{3 10 11}

In many countries, general practitioners act as gatekeepers for referral to hip replacement surgery. However, it is not known whether the general practitioners or other referring physicians and the orthopaedic surgeons have the same views on who should have a THR. Furthermore, it is not known whether the surgeons and the referring physicians agree internally on the appropriate level of disease severity in patients selected for surgery.

One purpose of the European collaborative database of cost and practice patterns of THR¹² (EUROHIP) project is evaluating the decision-making processes for THR in different European countries. We analyse the differences of opinions between orthopaedic surgeons and their referring physicians on the indications for a primary THR.

METHODS

EUROHIP is based on data provided by collaborating orthopaedic centres throughout Europe.¹² This survey was conducted in 2002 in 22 centres from 12 European countries with two different groups of physicians: all orthopaedic surgeons performing THR in each patient and the 20 physicians who referred most patients to that centre for THR. The literature was reviewed to determine the factors that should be considered (box 1). After pilot work, a standard English language questionnaire about these para-

Abbreviations: EUROHIP, The European collaborative database of cost and practice patterns of THR; THR, total hip replacement

Box 1 Parameters affecting indication for total hip replacement

- Pain
 - Severity
 - At rest
 - At night
 - With activity
- Function
 - Walking distance
 - Need for cane/crutch
 - Need for analgesics
 - Difficulty climbing stairs
 - Difficulty putting on shoes/socks
- Physical examination
 - Range of motion
- Radiograph
 - Amount of joint space preserved on x ray

meters was agreed upon with the EUROHIP group; this was then translated into each national language and retranslated into English to resolve discrepancies.

The questionnaires for both the surgeons and the referring physicians contained one part with the question, “What importance have pain, function, physical examination and radiographs for you in the decision whether your patient should undergo total hip replacement?” For each item, three possible answer categories were available: “high”, “intermediate” or “low” importance.

In addition, the questionnaire asked respondents 11 questions under the heading “medical indication for total hip replacement”, which were identical for surgeons and referring physicians. Firstly, a case scenario was developed with the following description: “You see a patient with a history of hip pain in your office/hospital and your examination reveals a decreased range of hip motion as well as radiographic hip osteoarthritis.” Participants were asked to “select the most appropriate level of each symptom/sign (independent from all other symptoms/signs) that would be an indication for total hip replacement from your point of view”. Five answers were possible for each item except the “amount of joint space”, which was divided into three categories.

Participants were also asked whether they would consider other aspects of pain or functional impairment when making the decision, and how they would rate the importance of these items.

Finally, participants were asked to rank seven symptoms in order of importance for their decision about the indication for THR.

Statistical analysis

After standard descriptive analyses using exact methods where appropriate, differences in the distribution of answers between surgeons and referring physicians were assessed by testing for differences in the mean scores, by using the Cochran–Mantel–Haenszel statistic. For this purpose, in the first block, the five possible answer categories for the most

appropriate level were coded from 1 to 5 (1 to 3 for joint space). In the second block, “low importance” was coded as –1, “intermediate importance” was coded as 0 and “high importance” was coded as +1. Thus, the p value for a difference between orthopaedic surgeons and referring physicians takes the inherent ordering of the categories into account. All analyses were carried out using SAS V.8.2.

RESULTS

A total of 304 orthopaedic surgeons and 314 referring physicians responded to the questionnaire. The results in table 1 show both similarities and differences in the overall approach to indications to THR within and between the two groups. Most respondents in both groups agreed that rest pain and pain with activity were of high importance, with range of hip motion and x ray changes being considered much less important. However, for all of the remaining items, a wide variability of answers was seen in both groups.

Significant differences were also seen between the groups for the importance of functional items such as difficulty climbing stairs and putting on shoes and socks: more referring physicians than surgeons indicated that these were very important criteria for their decision (36% v 23% and 39% v 22%, respectively).

Table 2 presents the orthopaedic surgeons’ and referring physicians’ assessment of the most appropriate level of pain and functional impairment that would be an indication for THR. The heterogeneous judgement within both groups is reflected by the fact that most (>50%) surgeons agreed on severity levels in only 5 of the 11 items (night and rest pain, analgesics, range of motion and joint space) and most referring physicians (>50%) agreed in only two items (climbing stairs and night pain).

Although there was a wide range of views within the groups, most participants in both groups considered pain severity important (table 2): most agreed that severe pain, rest pain or night pain and need for analgesics should be present on several days per week before THR is considered. However, nearly 15% of the referring physicians but only 6–9% of the surgeons thought that such symptoms should be present all the time; 12% of the surgeons believed that 1 day/week of night pain warranted surgery.

In table 2, the levels of functional impairment that may warrant an indication for THR are shown. Both groups considered reduced walking distance important, but the degree of restriction mentioned by most surgeons (<1 km, approximately 0.7 miles) was less than that of referring physicians (<0.5 km). For other impairments (climbing stairs, putting on shoes and socks, and the need for a crutch), the referring physicians again suggested more advanced disease as a prerequisite for surgery than surgeons.

Similar differences were observed with regard to joint damage. For an indication to surgery, 43% of referring physicians but only 16% of surgeons thought that hip flexion needed to be reduced <45° to constitute an indication for surgery. However, for radiographic changes comparable results over a wide range were noted in both groups, with >95% requiring joint space narrowing of at least 50%, but 40% demanding total loss of joint space. Interestingly, for a considerable number of participants in both groups (20–25%), the last two items had no relevance to their decision for recommending THR to a patient.

The additional items listed by the participants as being important for their decision for THR were divided into seven groups: pain (eg, duration of pain, pain with exercise, back pain, knee pain and so on), physical limitations (eg, reduced abduction and deformity), activities of daily living (eg, self-care, use of public transportation, caring for household, independent life and so on), participation in sport, sexual

Table 1 Comparison of orthopaedic surgeons' and referring physicians' assessment determinants on whether a patient should undergo total hip replacement

	Orthopaedic surgeons			Referring physicians			
	Importance			Importance			
	High (%)	Intermediate (%)	Low (%)	High (%)	Intermediate (%)	Low (%)	p Value
Rest pain	86.1	11.9	2.0	87.2	11.2	1.6	0.66
Pain with activity	70.1	27.0	3.0	68.8	27.7	3.5	0.67
Walking distance	51.6	44.1	4.3	54.6	42.5	2.9	0.34
Need for cane/crutches	34.8	40.4	24.8	30.2	50.2	19.6	0.91
Difficulty climbing stairs	22.9	64.6	12.6	36.3	56.9	6.8	<0.001
Difficulty putting on shoes and socks	21.7	58.2	20.1	39.1	50.3	10.6	<0.001
Range of motion on examination	33.4	46.4	20.2	27.0	53.1	19.9	0.28
Amount of joint space preserved on x ray	28.6	41.2	30.2	23.7	42.6	33.7	0.18

Table 2 Assessment by orthopaedic surgeons and referring physicians of the most appropriate level of pain and functional impairment that would be an indication for total hip replacement

Most appropriate level of pain							
	1 day/month (%)	1 day/week (%)	Several days/week (%)	Daily (%)	Permanently (%)	p Value	No relevance (%)
Severe pain							0.0
Surgeons	2.3	5.0	47.2	36.5	9.0		0.0
Referring physicians	1.3	8.6	41.1	33.9	15.1	0.24	0.7
Rest pain							2.3
Surgeons	0.3	8.2	52.6	30.4	8.5		3.3
Referring physicians	0.7	6.1	47.1	30.8	14.2	0.03	5.4
Night pain							4.3
Surgeons	0.7	12.7	54.4	25.8	6.4		4.3
Referring physicians	0.3	8.9	50.5	25.8	14.4	0.003	
Pain with activity							3.7
Surgeons	0.3	1.7	39.0	43.2	15.7		2.2
Referring physicians	0.3	3.3	33.7	42	20.7	0.27	
Need for analgesics							3.7
Surgeons	2.8	19.8	53.5	24.0			4.8
Referring physicians	1.4	21.2	43.0	34.5		0.06	
Most appropriate level for functional impairment							
	Unlimited (%)	1–3 km (%)	0.5–1 km (%)	>0.5 km (%)	Unable to walk (%)	p Value	No relevance (%)
Walking distance							4.7
Surgeons	0.3	11.1	46.7	39.0	2.8		5.3
Referring physicians	0.3	9.7	38.1	45.0	6.9	0.01	
	No difficulty	Negotiates few steps	One foot at a time	Assistance required	Unable	No relevance	
Difficulty climbing stairs							9.0
Surgeons	0.7	26.0	50.5	18.3	4.4		3.6
Referring physicians	0.0	17.2	56.8	20.9	5.1	0.03	
	No difficulty	Some difficulty	Needs long shoehorn	Assistance required	Unable	No relevance	
Difficulty putting on shoes and socks							13.3
Surgeons	0.4	21.2	40.8	33.5	4.2		6.5
Referring physicians	0.3	15.3	40.6	40.6	3.1	0.11	
	Never	1 day/month	1 day/week	Several days/week	Daily	No relevance	
Need for cane or crutch							25.3
Surgeons	1.4						
Referring physicians	1.4	4.1	21.5	52.5	20.5		
	Flexion<90	Flexion 45–90	Flexion 30–45	Flexion<30	Ankylosed	No relevance	
Range of motion							20.7
Surgeons	3.0	75.9	19.4	1.3	0.4		18.1
Referring physicians	2.4	44.9	38.2	11.8	2.8	<0.001	
	<50% preserved	None preserved				No relevance	
Amount of joint space preserved on x ray							23.7
Surgeons	3.1	57.2	39.7				24.9
Referring physicians	4.3	53.9	41.8			0.87	

activities, professional life (eg, type of profession and requirements of and limitation in professional life) and quality of life (eg, travel, social isolation and depression). The areas considered most important by both surgeons and referring physicians were quality of life issues, activities of daily living, sports and sex.

Table 3 shows the results of the question in ranking. Surgeons and referring physicians ranked pain symptoms first, with rest pain having the highest importance, followed by night pain and pain with activities. As shown, the only discrepancy between groups was in the order of the last two items, with surgeons but not referring physicians ranking radiographic change higher than social contact.

DISCUSSION

These results from the first multicentre, multinational, European survey of opinions on the indications for THR show that opinions about the severity of joint disease differ greatly between different referring physicians and surgeons, and that there are some important differences in the opinions of these groups of doctors. Referring physicians tended to think more often than the surgeons that patients had to have more severe disease to warrant surgery. In addition, referring physicians put more emphasis on social issues and quality of life, whereas surgeons were more concerned with the extent of joint damage. These differences may be explained by the fact that the referring physicians have many non-surgical options, and treat the patient as a whole, whereas surgeons restrict themselves to surgically treat damaged joints.

Currently, there are no universally accepted criteria by which to determine the severity of osteoarthritis and the appropriate indication of THR. Consensus groups have developed different criteria for THR in Canada,^{3,8} New Zealand¹¹ and the USA.¹⁰ Constant pain, with or without substantial functional impairment, and radiographic changes are the generally agreed criteria for joint replacement. This is partly consistent with our findings: groups of both surgeons and referring physicians uniformly agreed that pain (especially rest pain, but also night pain and pain with activity) and functional impairment are the most important factors in their decision to recommend THR. On the other hand, radiographic changes and decreased range of motion were only of high importance for about one fourth to one third of all respondents. In addition, there was no consensus within groups regarding the appropriate severity of radiographic changes and among the referring physicians for the limitation in the range of motion.

Marked differences were seen between the groups with regard to the importance of certain activities of daily living, such as difficulties with climbing stairs and putting on shoes and socks. Although many referring physicians emphasise

the importance of activities of daily living, most surgeons give less importance to these items. The fact that most surgeons give less importance to important activities of daily living is surprising, as patients are highly interested in the effect of surgery on their activities of daily living¹³⁻¹⁵ and seem to value these issues more strongly than their surgeons.¹⁶ This might partly explain the differences in expectation¹⁷ and evaluation of outcome¹⁸⁻²⁰ in THR between patients and physicians.

Thus, although our data are consistent with other findings to produce a consensus on the indications for THR,²¹ they also emphasise the degree of variation within surgeons and referring physicians and the overall differences between the two groups. Variation among surgeons could lead to some patients being considered appropriate for THR by one surgeon, being refused by another or vice versa. Under the plausible assumption that these variations are not random, they may also be one explanation for the large within-country and between-country variations in the rates of provision that have been observed.⁷

The differences between referring physicians, as a group, and surgeons may also be of great relevance to service provision. In most countries, referring physicians act as "gatekeepers" to surgery. Our data suggest that gatekeepers think that patients need to be more severely affected to warrant surgery than do the surgeons themselves. The referring physicians may therefore be holding patients back, who, if they got to the surgeon, would be offered a THR. Similarly, the wide variations in the views of different referring doctors that we observed can lead to variations and perhaps inequities in the provision of THR.

Our study has both strengths and weaknesses. On the positive side, the selection of the main criteria was made on the basis of a comprehensive review of the literature, and the survey instrument was designed and piloted in consultation with a wide group of physicians, surgeons and epidemiologists. Large numbers of respondents participated, and the response rate and completion of forms were excellent. Obviously, the main limitation of our survey is that it was based on a convenience sample from self-selected centres of excellence, and thus is not representative. Responses on the questionnaire may not completely reflect actual practice. Also, by considering individual criteria one at a time, the complexity of the decision-making process and potential interactions of different indications cannot be taken into account. As some participants named additional items, we may have missed relevant determinants. Especially limited participation in recreational sports and discomfort with sexual activities have been mentioned repeatedly. This is consistent with some earlier reports, indicating that these factors are most important for a subgroup of patients.¹³ At least one other factor that may be important, sex, was not considered at all.²² Finally, we do not have any information on the views of the patients themselves, who most certainly have a very important role in the decision making.

Determining when to perform a total hip arthroplasty for the treatment of osteoarthritis is difficult. Ultimately, this question needs to be answered by the patients with the help of their doctor. If, at a given point in time, a patient believes that the overall benefit of total hip arthroplasty outweighs the risks, then delaying the procedure until the benefit is even greater makes no sense.²³ However, currently, there is no consensus on objective indication criteria. Applying the most commonly used determinants in the present survey, a wide variability of decisions from doctors responsible for the care of these patients has surfaced.

In our view, future work needs to take a more comprehensive approach, considering indications and modifying factors simultaneously, and exploring so-called appropriateness criteria.²⁴ Taking into account the views of patients,

Table 3 Comparison of ranking of determinants by orthopaedic surgeons and referring physicians with regard to their importance for the decision on whether a patient should undergo total hip replacement

	Orthopaedic surgeons	Referring physicians
Rest pain	1	1
Night pain	2	2
Pain with activity	3	3
Functional impairment	4	4
Decreased range of motion	5	5
Osteoarthritis x ray changes	6	7
Impaired social contact	7	6

more emphasis may need to be placed on societal values and contextual factors. The indications and prioritisation for hip replacement may need to be considered within an appropriate theoretical framework, such as the International Classification of Functioning, Disability and Health,²⁵ and must also include understanding of factors that affect the willingness of patients to undergo surgery.^{17 26 27} Finally, our work points towards a strong need for more collaboration and consultation between surgeons and their referring physicians in any locality, so that they could, for example, agree upon their own "appropriateness criteria" for their population.

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